



IN THE U.S. PATENT AND TRADEMARK OFFICE

Application No.: 09/991,111

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Applicant: Arnab DAS et al.

Group Art Unit: 2611

Examiner: Freshteh N. Aghdam

Title: A METHOD FOR ENCODING AND DECODING
CONTROL INFORMATION IN A WIRELESS
COMMUNICATION SYSTEM

Attorney Docket: 129250-002061/US

APPLICANTS'/APPELLANTS' BRIEF ON APPEAL

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APPELLANTS' BRIEF ON APPEAL

I. REAL PARTY IN INTEREST:

The real party in interest in this appeal is Lucent Technologies Inc. Assignment of the application was submitted to the U.S. Patent and Trademark Office and recorded at Reel 012527, Frame 0155.

II. RELATED APPEALS AND INTERFERENCES:

There are no known appeals or interferences that will affect, be directly affected by, or have a bearing on the Board's decision in this Appeal.

III. STATUS OF CLAIMS:

Claims 1 and 3-14 are pending in the application, with claims 1, 12, 13 and 14 being written in independent form.

Claims 1, 3-10, 13 and 14 remain finally rejected under 35 U.S.C. §103(a) based on U.S. Patent No. 6,438,119 to Kim et al ("Kim") and alleged prior art disclosed in the instant specification, while claims 11 and 12 remain finally rejected under 35 U.S.C. §103(a) based on the combination of Kim, prior art allegedly disclosed in the instant specification and U.S. Patent No. 6,621,873 to Lee et al ("Lee"). Claims 1 and 3-14 are being appealed. Claim 2 has been cancelled.

IV. STATUS OF AMENDMENTS:

A Request for Reconsideration ("Request") was filed on February 28, 2007. In an Advisory Action dated March 28, 2007, the Examiner stated that the Request was considered but did not place the application in condition for allowance.

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V. SUMMARY OF CLAIMED SUBJECT MATTER:

(i). Overview of the Subject Matter of the Independent Claims

The present invention is directed at faster methods (and related devices) for determining which mobile device, among a number of devices, should decode an incoming data signal sent from a base station via a control channel. To do so, only a portion of encoded signaling information sent via a shared control channel from a base station to each mobile is decoded by each mobile. Once a mobile device is selected, it can decode the data signal on the control channel. More specifically, independent claim 1 reads as follows (specification citations follow in parenthesis):

1. A method for processing control information in a wireless communication system via a shared control channel that includes encoded signaling information for a corresponding data transmission in another channel, the method comprising:

in the shared control channel, separately decoding a portion of the encoded signaling information; and

deriving transmission format information from the separately decoded portion of the encoded signaling information for the corresponding data transmission before a remainder of the encoded signaling information is decoded.

(see specification, page 4, lines 1-8; page 4, line 27 to page 5, line 28; page 6, lines 15-23; and page 7, lines 22-31, for example).

Independent claim 12 reads as follows:

12. A method for processing information in a wireless communication system via a shared communications channel that includes encoded signaling information, wherein the encoded signaling information includes one or more portions of encoded information, the method comprising:

selectively puncturing bits from the encoded signaling information such that the number of bits punctured from certain of the one or more

**portions is less than the number of bits punctured from other portions;
and**

separately decoding the certain one or more portions of the encoded information to facilitate transmission in the wireless communication system.

(see specification, page 4, lines 1-8; page 4, line 27 to page 5, line 28; page 6, lines 15-23; page 7, lines 22-31; and page 8, lines 2-10 and 22-26, for example).

Independent claim 13 reads as follows:

13. A method for transmitting control information in a wireless communication system via a shared control channel that includes signaling information for a corresponding data transmission in another channel, the method comprising:

encoding the signaling information such that portions of the signaling information are separately encoded and one or more of the portions include transmission format information for the corresponding data transmission; and

transmitting the encoded signaling information via the control channel such that the transmission format information can be derived from the one or more portions before a remainder of the encoded portions are decoded.

(see specification, page 4, lines 1-8; page 4, line 27 to page 5, line 28; page 6, lines 15-23; and page 7, lines 22-31, for example).

Independent claim 14 reads as follows:

14. A method for decoding control information in a wireless communication system via a shared control channel including at least one base station and at least one mobile station, the method comprising:

receiving coded information at a mobile station, wherein the coded information includes signaling information indicative of a transmission format that corresponds to a data transmission;

separately decoding a portion of the coded information prior to the data transmission.

(see specification, page 4, lines 1-8; page 4, line 27 to page 5, line 28; page 6, lines 15-23; and page 7, lines 22-31, for example).

In order to make the overview set forth above concise the disclosure that has been included, or referred to, above only represents a portion of the total disclosure set forth in the Specification that supports the independent claims.

(ii). The Remainder of the Specification Also Supports the Claims

The Appellants note that there may be additional disclosure in the Specification that also supports the independent and dependent claims. Further, by referring to the disclosure above the Appellants do not represent that this is the only evidence that supports the independent claims nor do Appellants necessarily represent that this disclosure can be used to fully interpret the claims of the present invention. Instead, this disclosure is an overview of the claimed subject matter.

VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL:

Appellants seek the Board's review and reversal of the rejection of claims 1, 3-10, 13 and 14 under 35 U.S.C. §103(a) based on Kim and alleged prior art disclosed in the instant specification, and claims 11 and 12 under 35 U.S.C. §103(a) based on a combination of Kim, prior art allegedly disclosed in the instant application and in further view of Lee.

VII. ARGUMENTS:

I. The Section 103 Rejections of Claims 1, 3-10, 13 and 14

Claims 1, 3-10, 13 and 14 were rejected under 35 U.S.C. §103(a) based on Kim in further view of prior art allegedly disclosed in Appellants' application (i.e., text in the specification). Appellants respectfully disagree for at least the following reasons.

Initially, Appellants note the Examiner's admission that Kim does not disclose "a shared control channel" (page 3 of Final Office Action). To make up

for this deficiency the Examiner relies upon text/disclosure in the instant application. However, as the Appellants have pointed out before the background information contained in the instant application does not discuss the operation of shared control channels as in the claims of the present invention. In particular, encoded signaling information within existing shared control channels is not separately decoded such that a portion of the encoded information is decoded to derive transmission format information for a corresponding data transmission before a remainder of the encoded information is decoded.

In order to render claims 1, 3-10, 13 and 14 obvious the references relied on by the Examiner must disclose or suggest, among other things: (a) a shared control channel, that (b) includes encoded signaling information of which a (c) portion is separately decoded (d) before a remainder of the encoded signaling information is decoded (elements (c) and (d) may be referred to as "decoding features").

As indicated above, Kim lacks a disclosure or suggestion of a shared control channel. Further, the text in the instant specification lacks the decoding features. In sum, giving the Examiner the benefit of the doubt the most that Kim and the text from the instant specification appear to disclose is the use of a shared control channel in a different way than claimed.

Because none of the cited references, taken separately or in combination, discloses or suggests the use of a shared control channel as in claims 1, 3-10, 13 and 14 these claims are patentable over such references.

Accordingly, Appellants respectfully request that the members of the Board reverse the decision of the Examiner, withdraw these rejections and allow claims 1, 3-10, 13 and 14.

II. The Section 103 Rejections of Claims 11 and 12

Claims 11-12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kim in combination with prior art allegedly disclosed in the

instant application and in further view of Lee. Appellants respectfully disagree for at least the following reasons.

Initially, Appellants note that Lee does not overcome the deficiencies of Kim and the prior art allegedly disclosed in the instant application discussed above with respect to claims 1 and 10, from which claim 11 depends. Therefore, for at least the reasons stated above, claim 11 is not rendered obvious by the combination of references relied upon by the Examiner.

Further, Appellants acknowledge the Examiner's implicit, if not explicit admission, that neither Kim nor the alleged prior art found in the instant application disclose or suggest the puncturing of bits from a portion of encoded signaling information that is separately decoded such that the puncturing is less than the puncturing of bits from remaining encoded signaling information, as recited in claim 11, and similarly recited in claim 12. The Examiner relies on Lee to overcome this deficiency.

However, the Appellants respectfully submit that Lee does not suggest the claimed puncturing features because it appears that Lee is directed at puncturing "tail symbols" that do not appear to be part of signaling information; rather, they are used for error checking (i.e., parity checking).

In the Final Office Action (page 8) the Examiner appears to acknowledge that Lee does not disclose or suggest the claimed puncturing of signaling information when the Examiner states (after explaining Lee's puncturing): "One of ordinary skill in the art would recognize that the same puncturing scheme [in Lee] could be applied to a signaling frame as well." Said another way, even though Lee does not disclose the claimed puncturing of signaling information the Examiner nonetheless rejects the claims based on the three references plus the Examiner's own personal knowledge or opinion to reject the claims. Absent an affidavit attesting to facts in support of such a position, such a position is impermissible.

Perhaps realizing the shortcomings of the position set forth in the Final Office Action, the Examiner attempts to provide additional arguments and evidence to support the statement that the claimed puncturing is obvious in light of the three references already cited. In the Advisory Action the Examiner: (a) takes the position that the puncturing of a signaling frame set forth in claims 11 and 12 is obvious in light of the three references because both the claimed signaling, and Lee's error checking, information "comprise...bits or symbols" (page 4, lines 6-7); and (b) cites two new references in support of this position.

Turning to (a) first, while both signaling information and error checking information may both comprise bits and symbols, the two types of information are not the same, nor are the bits and symbols making up the information used for the same purpose, in the present application. In sum, the claimed puncturing of signaling information would not have been obvious to one skilled in the art upon reading the three references simply because the two types of information may both comprise bits and symbols; almost all telecommunication information, whether signaling, error checking or data includes bits and most also includes symbols.

As for (b), if the Examiner is relying upon these two new references then the Appellants respectfully request that prosecution be re-opened so that the Appellants have a fair opportunity to address these references. Said another way, it appears to the Appellants as if the Examiner has raised a new issue for the first time in the Advisory Action.

Whether or not the Examiner is relying on these references the Appellants respectfully submit that neither of the two new references discloses the puncturing of signaling information. While the first reference (U.S. Patent No. 6,553,540 to Schramm et al) may disclose two different puncturing schemes and the second (U.S. Patent Publication No. 2004/0133841 to Lundby

et al) may disclose puncturing neither discloses the puncturing of signaling information as in claims 11 and 12.

Accordingly, Appellants respectfully request that the members of the Board reverse the decision of the Examiner, withdraw these rejections and allow claims 11 and 12.

Conclusion:

Appellants respectfully request that members of the Board reverse the decision of the Examiner and allow claims 1 and 3-14.

The Commissioner is authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 50-3777 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

1. A method for processing control information in a wireless communication system via a shared control channel that includes encoded signaling information for a corresponding data transmission in another channel, the method comprising:

in the shared control channel, separately decoding a portion of the encoded signaling information; and

deriving transmission format information from the separately decoded portion of the encoded signaling information for the corresponding data transmission before a remainder of the encoded signaling information is decoded.

2. (Cancelled)

3. The method according to claim 1, wherein each of the plurality of mobile stations has a corresponding dedicated control channel, the method further comprising the step of:

at one of the plurality of mobile stations, receiving information in the dedicated control channel corresponding to that mobile station indicating to that mobile station that the encoded signaling information in the control channel is associated with a data transmission for that mobile station.

4. The method according to claim 1, wherein the encoded signaling information includes information selected from one or more of the groups consisting of transport format and resource-related information, hybrid automatic repeat request information, and cyclic redundancy check information.

5. The method according to claim 4, wherein the transport format and resource-related information includes the transmission format information.

6. The method according to claim 5, wherein the transmission format information includes information selected from one or more of the groups consisting of code information, modulation information, transport block set size information, and transport channel identification information.

7. The method according to claim 1, wherein the step of separately decoding a portion of the encoded signaling information is performed prior to the start of a transmission time interval corresponding to the data transmission.

8. The method according to claim 1, wherein the encoded signaling information is convolutionally coded and wherein a single set of tail bits are added to the encoded signaling information.

9. The method according to claim 1, wherein the encoded signaling information is convolutionally coded and wherein tail bits are selectively added to the encoded signaling information so that the portion of the encoded signal information that is separately decoded includes a subset of the total number of tail bits.

10. The method according to claim 9, further comprising the step of puncturing selected bits from the encoded signaling information.

11. The method according to claim 10, wherein the puncturing of bits from the portion of the encoded signaling information that is separately decoded is less than the puncturing of bits from the remaining encoded signaling information.

12. A method for processing information in a wireless communication system via a shared communications channel that includes encoded signaling information, wherein the encoded signaling information includes one or more portions of encoded information, the method comprising:

selectively puncturing bits from the encoded signaling information such that the number of bits punctured from certain of the one or more portions is less than the number of bits punctured from other portions; and

separately decoding the certain one or more portions of the encoded information to facilitate transmission in the wireless communication system.

13. A method for transmitting control information in a wireless communication system via a shared control channel that includes signaling information for a corresponding data transmission in another channel, the method comprising:

encoding the signaling information such that portions of the signaling information are separately encoded and one or more of the portions include transmission format information for the corresponding data transmission; and

transmitting the encoded signaling information via the control channel such that the transmission format information can be derived from the one or more portions before a remainder of the encoded portions are decoded.

14. A method for decoding control information in a wireless communication system via a shared control channel including at least one base station and at least one mobile station, the method comprising:

receiving coded information at a mobile station, wherein the coded information includes signaling information indicative of a transmission format that corresponds to a data transmission;

separately decoding a portion of the coded information prior to the data transmission.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.